

PTO/SB/08A (08-03)

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Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Complete if Known

Application Number	10/664,617
Filing Date	January 14, 2004
First Named Inventor	Vipul Shah
Art Unit	1646
Examiner Name	
Attorney Docket Number	03-28 US

Sheet 1 of 5

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
/cc	1	US- 2003/0055241 A1	03/20/2003	Moore, et al.	
	2	US- RE 34,069	09/15/1992	Koster, et al.	
	3	US- 4,352,909	10/05/1982	Barda, et al.	
	4	US- 4,469,863	09/04/1984	Ts'o, et al.	
	5	US- 4,725,677	02/16/1988	Koster, et al.	
	6	US- 4,774,339	09/27/1988	Haugland, et al.	
	7	US- 5,034,506	07/23/1991	Summerton, et al.	
	8	US- 5,124,047	06/23/1992	Quach, et al.	
	9	US- 5,138,045	08/11/1992	Cook, et al.	
	10	US- 5,187,288	02/16/1993	Kang, et al.	
	11	US- 5,214,134	05/25/1993	Weis, et al.	
	12	US- 5,216,141	06/01/1993	Steven A. Benner	
	13	US- 5,218,105	06/08/1993	Cook, et al.	
	14	US- 5,223,618	06/29/1993	Cook, et al.	
	15	US- 5,248,782	09/28/1993	Haugland, et al.	
	16	US- 5,264,562	11/23/1993	Mark Matteucci	
	17	US- 5,274,113	12/28/1993	Kang, et al.	
	18	US- 5,278,302	01/11/1994	Caruthers, et al.	
	19	US- 5,321,131	06/14/1994	Agrawal, et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
/cc	60	WO 86/05518	09/25/1986	Summerton, et al.		
	61	WO 90/15065	12/13/1990	Gilead Sciences		
	62	WO 91/18997	12/12/1991	Gilead Sciences		
	63	WO 92/05186	04/02/1992	Gilead Sciences		

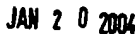
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Considered

9/28/05

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Substitute for form 1449/PTO

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Sheet 2

of 5

Complete if Known

Application Number	10/664.617
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Filing Date	January 14, 2004
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First Named Inventor	Vipul Shah
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Art Unit	1646
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Examiner Name

Attorney Docket Number	03-28 US
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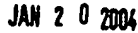
U. S. PATENT DOCUMENTS

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Sheet 3

of 5

Application Number	10/664,617
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Filing Date	January 14, 2004
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First Named Inventor	Vipul Shah
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Art Unit	1646
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Examiner Name

Attorney Docket Number	03-28 US
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		Number-Kind Code ² (if known)			
6	40	US- 5,587,361	12/24/1996	Cook, et al.	
	41	US- 5,587,469	12/24/1996	Cook, et al.	
	42	US- 5,587,470	12/24/1996	Cook, et al.	
	43	US- 5,596,086	01/21/1997	Matteucci, et al.	
	44	US- 5,602,240	02/11/1997	De Mesmaeker, et al.	
	46	US- 5,610,289	03/11/1997	Cook, et al.	
	47	US- 5,614,617	03/25/1997	Cook, et al.	
	48	US- 5,670,633	09/23/1997	Cook, et al.	
	49	US- 5,792,608	08/11/1998	Swaminathan, et al.	
	50	US- 5,817,781	10/06/1998	Swaminathan, et al.	
	51	US- 5,882,551	03/16/1999	Dever, et al.	
	52	US- 6,156,896	12/05/2000	Curran, et al.	
	53	US- 6,288,157	09/11/2001	Jariwala, et al.	
	54	US- 6,320,040	11/20/2001	Cook, et al.	
	55	US- 6,355,791	03/12/2002	Gjerde, et al.	
	56	US- 6,447,749	09/10/2002	Licha, et al.	
	57	US- 6,518,368	02/11/2003	Gill, et al.	
	58	US- 6,521,714	02/18/2003	Kolich, et al.	
10	59	US- 6,525,127	02/25/2003	Jariwala, et al.	

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Signature**

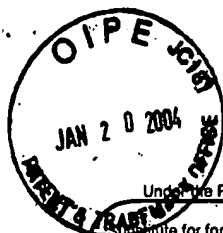
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		Complete if Known	
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		Filing Date	January 14, 2004
		First Named Inventor	Vipul Shah
		Art Unit	1646
		Examiner Name	
Sheet 4 of 5	Attorney Docket Number	03-28 US	

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
lac	64	Abstract by HAUNG, GJ and KRUGH, IR, entitled "Large Scale Purification of Synthetic Oligonucleotides and Carcinogen-modified oligodeoxynucleotides on a reverse-phase polystyrene (PRP-1) column", download from www.ncbi.nlm.nih.gov, September 9, 2003	
	65	Article by BOSCH, JT, et al., entitled "Validation of Sequence-Optimized 70 Base Oligonucleotides for Use on DNA Microarrays", published 09/2003, OPERON, A Qiagen Company	
	66	Article by KANE, MD, et al., entitled "Assessment of the Sensitivity and Specificity of Oligonucleotide (50mer) Microarrays", published in Nucleic Acids Research, 2000, Vol. 28, No. 22, pages 4552-4557	
	67	Article by HUBER, CG, et al., entitled "High-Resolution Liquid Chromatography of Oligonucleotides on Nonporous Alkylated Styrene-Divinylbenzene Copolymers", published by Analytical Biochemistry, 212, pages 351-358 (1993)	
	68	Article by TALLARICO, JA., et al. entitled "An Alkylsilyl-Tethered, High-Capacity Solid Support Amenable to Diversisty-Oriented Synthesis for One-Bead, m One-Stock Solution Chemical Genetics", published by Journal of Combinatorial Chemistry, 2001, Vol. 3, No. 3, pages 312-318	
	69	Article by TAN, DS., et al., entitled "Stereoselective Synthesis of over Two Million Compounds Having Structural Features Both Reminiscent of Natural Products and Compatible with Miniaturized Cell-Based Assays, published in J. Am. Chem. Soc, 1998, 120, pages 8565-8566	
	70	Abstract by STIRCHAK, EP entitled "Uncharged stereoregular nucleic acid analogs: 2. Morpholin nucleoside oligomers with carbamate internucleoside linkages, published in Nucleic Acids Res. 1989, Aug 11;17(15):6129-41.	
	71	Article by BEAUCAGE, SL and IYER, RP, entitled "The Synthesis of Specific Ribonucleotides and Unrelated Phosphorylated Biomolecules by the Phosphoramidite Method, published in Tetrahedron, Vol. 49, No. 46, pages 10441-10488, 1993.	
	72	Article by MERTES, MP and COATS, EA entitled "Synthesis of Carbonate Analogs Dinucleosides", published J. Med. Chem., 1969, Vol. 12, pages 154-157.	
lac	73	Article by VASSEUR, et al., entitled "Oligonucleosides: Synthesis of a Novel Methylhydroxylamine-Linked Nucleoside Dimer and Its Incorporation into Antisense Sequences" published by J. Am. Chem. Soc, 1992, 114, pages 4006-4007.	

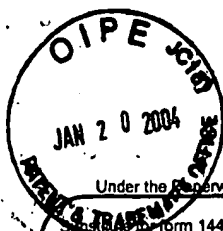
Examiner Signature	<i>[Signature]</i>	Date Considered	9/28/05
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Application Number	10/664,617
Filing Date	January 14, 2004
First Named Inventor	Vipul Shah
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Attorney Docket Number	03-28 US

Sheet	5	of	5
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NON PATENT LITERATURE DOCUMENTS

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lc	74	Article by SOOD, A, et al., entitled "Boron-Containing Nucleic Acids" published by J. Am. Chem. Soc., 1990, 112, pages 9000-9001.	
	75	Article by MUSICKI B and WIDLANSKI TS entitled "Synthesis of Carbohydrate Sulfonates and Sulfonate Exters" published by J. Org. Chem., Vol. 55, No. 14, 1990, pages 4231 - 4233.	
	76	Article by STIRCHAK, EP and SUMMERTON, JE entitled "Uncharged Stereoregular Nucleic Acid Analogues" published J. Org. Chem., 1987, 52, pages 4202-4206.	
	77	Article by REYNOLDS, RC et al., entitled "Synthesis of Thymidine Dimers Containing Internucleoside Sulfonate and Sulfonamide Linkages" published by J. Org. Chem., 1992, 57, pages 2983-2985.	
	78	Article by SAMUKOV, VV et al., entitled "2-(4-Nitrophenyl)sulfonylethoxycarbonyl (Nsc) Group as a Base-Labile a-Amino Protection for Solid Phase Peptide Synthesis, published by Tetrahedron Letters, Vol. 35, No. 42, pages 7821-7824, 1994.	
	79	Article by WANG H. and WELLER DD entitled "Solid Phase Synthesis of Neutral Oligonucleotide Analogues" published by Tetrahedron Letters, Vol. 32, No. 50, pages 7385-7388, 1991.	
	80	Article by MUNGALL, WS and KAISER, JK entitled "Carbamate Analogues of Oligonucleotides" published by J. Org.Chem., Vol. 42, No. 4, 1977, pages 703-706.	
	81	Article by COULL, JM et al., entitled "Synthesis and Characterization of a Carbamate-Linked Oligonucleosides" published by Tetrahedron Letters, Vol. 28, No. 7, pages 745-748, 1987.	
	82	Article by BEAUCAGE, SL and IYER, RP, entitled "Advances in the Synthesis of Oligonucleotides by the Phosphoramidite Approach", published by Tetrahedron , Vol. 48, No. 12, pages 2223-2311, 1992.	
lc	83	Article by BEAUCAGE, SL and IYER, RP, entitled "The Functionalization of Oligonucleotides Via Phosphoramidite Derivatives", published by Tetrahedron , Vol. 49, No. 10, pages 1925-1963, 1993.	

Examiner Signature		Date Considered	9/28/05
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